

What is Claimed:

1. A method for identifying an agent that
5 increases glucose dependent insulin secretion in pancreatic
islet β -cells comprising the steps of:

10 (a) obtaining a pancreatic islet β -cell culture;
(b) contacting the pancreatic islet β -cell
culture with an agent of interest; and
15 (c) detecting whether said agent of interest
has an inhibitory affect on the activity of
phosphodiesterase 1C in said pancreatic
islet β -cells, the presence of an
inhibitory effect indicating that the agent
of interest may be useful for increasing
15 insulin secretion.

2. The method of Claim 1 wherein said cultured
pancreatic islet β -cells are cultured insulinoma cells
20 derived from transgenic mice that express the SV40 large T
antigen in pancreatic islet β -cells.

25 3. The method of Claim 1 wherein the inhibition
to phosphodiesterase 1C activity is detected by measuring
substrate concentrations of cGMP phosphodiesterase activity.

4. A novel phosphodiesterase 1C inhibitor identified by the method of Claim 1.

5. A method of treating type II diabetes comprising administering to a subject an amount of a phosphodiesterase 1C inhibitor effective to treat the type II diabetes.

10 6. The method of Claim 5 wherein said phosphodiesterase 1C inhibitor is a compound of the general formula isobutylmethylxanthine derivatives with substitutions at positions 2 and 8.

15 7. The method of Claim 6 wherein said phosphodiesterase 1C inhibitor is selected from the group consisting of eburnamenine-14-carboxylic acid ethyl ester (vincocetine), zaprinast, 4-[3-(cyclopentyloxy)-4-methoxyphenyl]-2-pyrrolidinone (rolipram), 1,6-dihydro-2-methyl-6-oxo-(3,4'-bipyridine)-5-carbonitrile (milrinone), and/or combinations thereof.

25 8. The method of Claim 6 wherein said phosphodiesterase 1C inhibitor is administered in an amount effective to regulate blood sugar levels in said subject.

9. The method of Claim 6 wherein said phosphodiesterase 1C inhibitor is administered in an amount

effective to achieve a blood level ranging from about 1 to about 1000 $\mu\text{g}/\text{Kg}$.

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